

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,921,482 B1  
APPLICATION NO. : 09/889961  
DATED : July 26, 2005  
INVENTOR(S) : Cheng et al.

Page 1 of 13

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

THE TITLE PAGE SHOWING ILLUSTRATIVE FIGURE, SHOULD BE DELETED  
AND SUBSTITUTE THEREFORE THE ATTACHED TITLE PAGE

**DELETE** DRAWING SHEETS 1-11 AND **SUBSTITUTE** THEREFORE THE  
DRAWING SHEETS CONSISTING OF FIGS 1-11 AS SHOWN ON THE  
ATTACHED PAGE.

Signed and Sealed this

Twenty-first Day of August, 2007

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, looped initial "J" and a distinct "D".

JON W. DUDAS  
*Director of the United States Patent and Trademark Office*

(12) **United States Patent**  
Cheng et al.

(10) Patent No.: **US 6,921,482 B1**  
(45) Date of Patent: **Jul. 26, 2005**

(54) **SKINNED HOLLOW FIBER MEMBRANE  
AND METHOD OF MANUFACTURE**

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(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

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(22) PCT Filed: Jan. 27, 2000

(86) PCT No.: PCT/US00/02194

§ 371 (c)(1).

(2), (4) Date: Jul. 24, 2001

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1999.

(51) Int. Cl.<sup>7</sup> ..... B01D 69/00; B01D 71/28

(52) U.S. Cl. .... 210/500.23; 210/500.36;  
210/500.27; 210/640; 210/321.8; 95/46;  
264/41

(58) Field of Search ..... 210/500.36, 500.27,  
210/500.23, 490, 321.8; 264/41; 427/244;  
96/4; 95/45, 46

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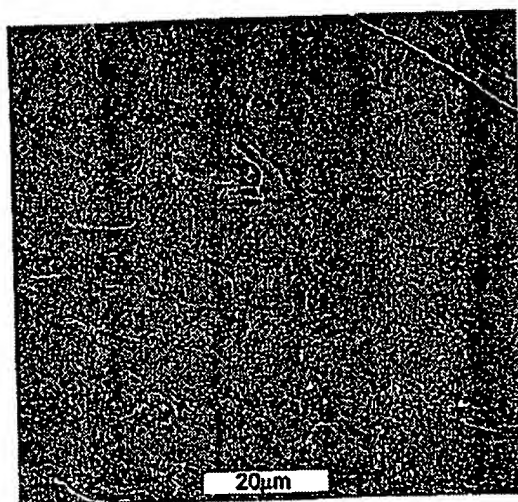
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Cook; Mykrolls Corporation

(57) **ABSTRACT**

Hollow fiber membranes having a skinned surface on one  
diameter, and a porous surface on the opposite diameter arm  
produced from perfluorinated thermoplastic polymers by  
extruding a heated solution of the polymer having a lower  
critical solution temperature directly into a cooling bath to  
form the porous membrane by liquid-liquid phase separa-  
tion. Extrusion can be conducted either vertically or hori-  
zontally. The hollow fiber membranes are useful as ultrafil-  
tration membranes and as membrane contactors.

18 Claims, 11 Drawing Sheets



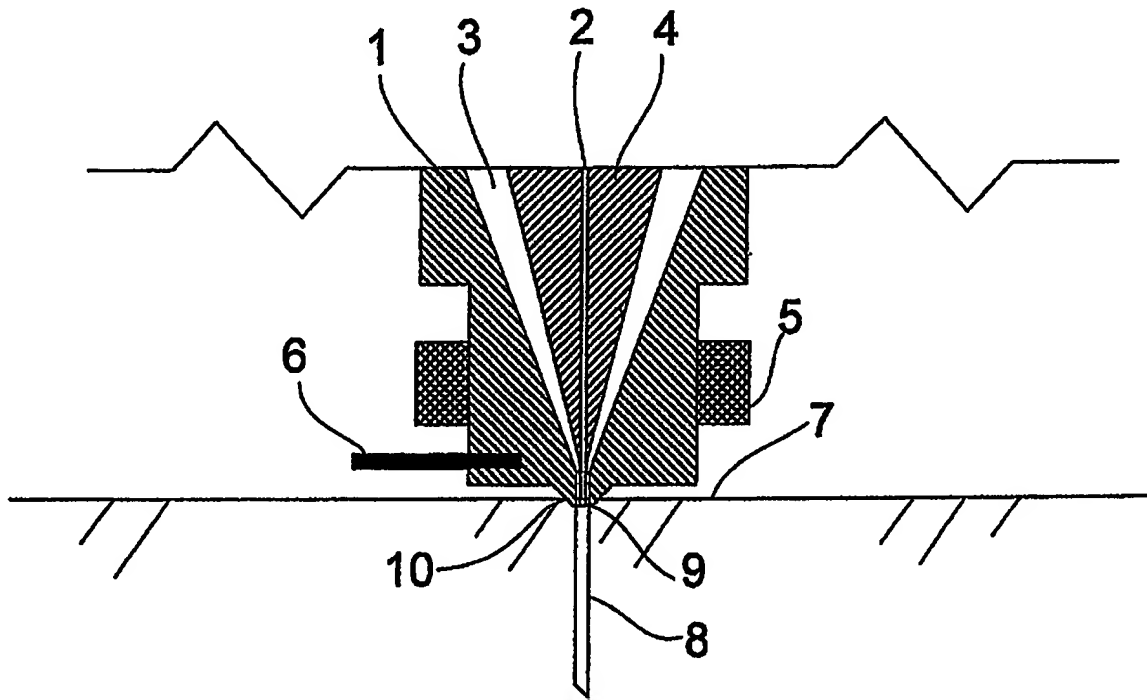


Fig.1

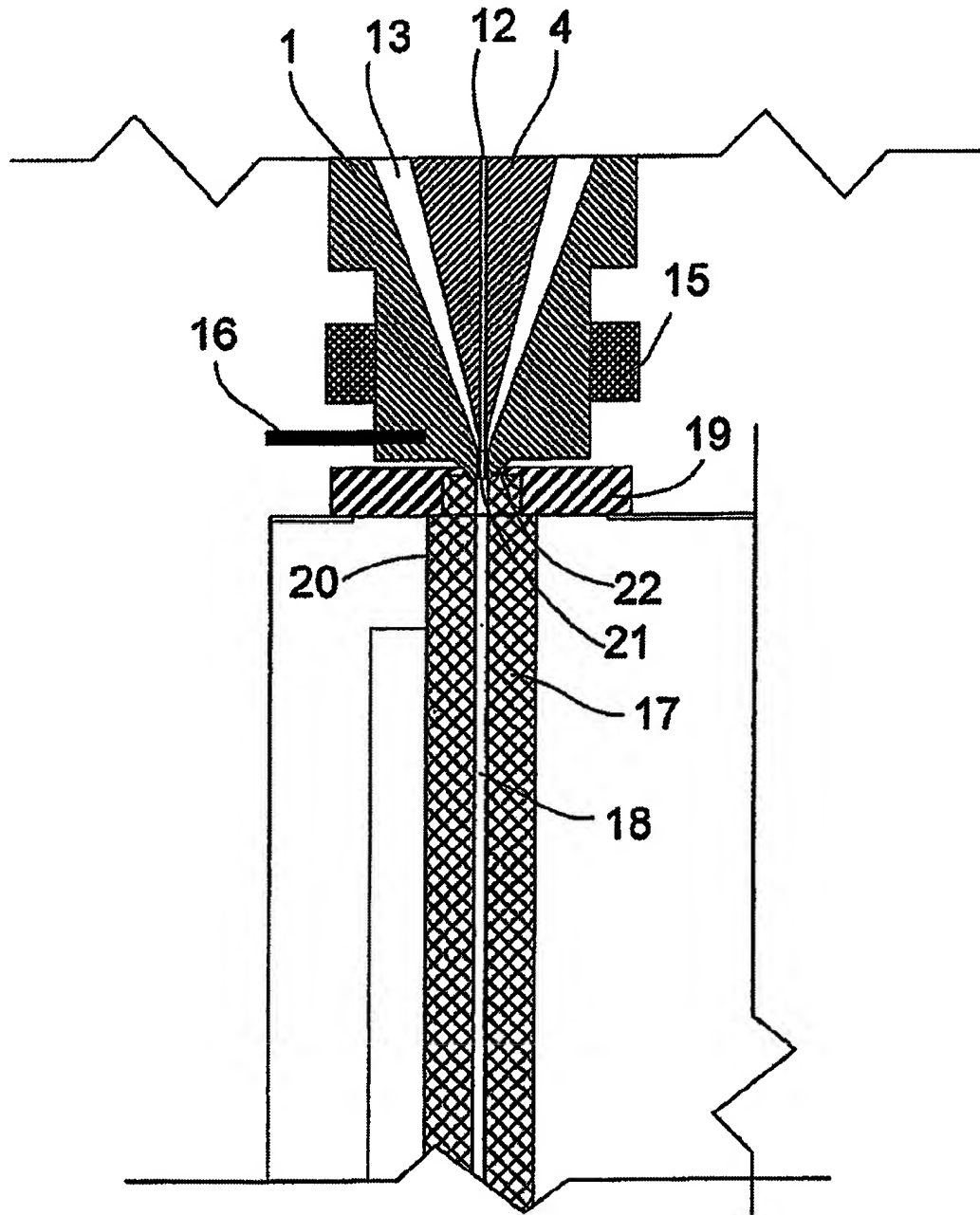
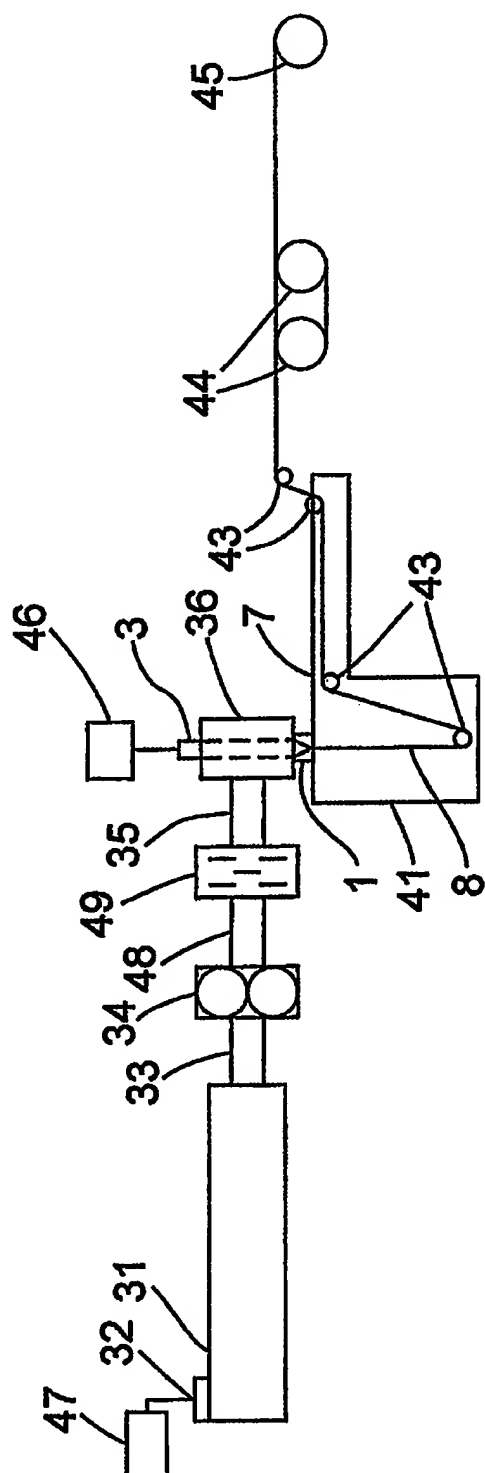


Fig.2



**Fig. 3**

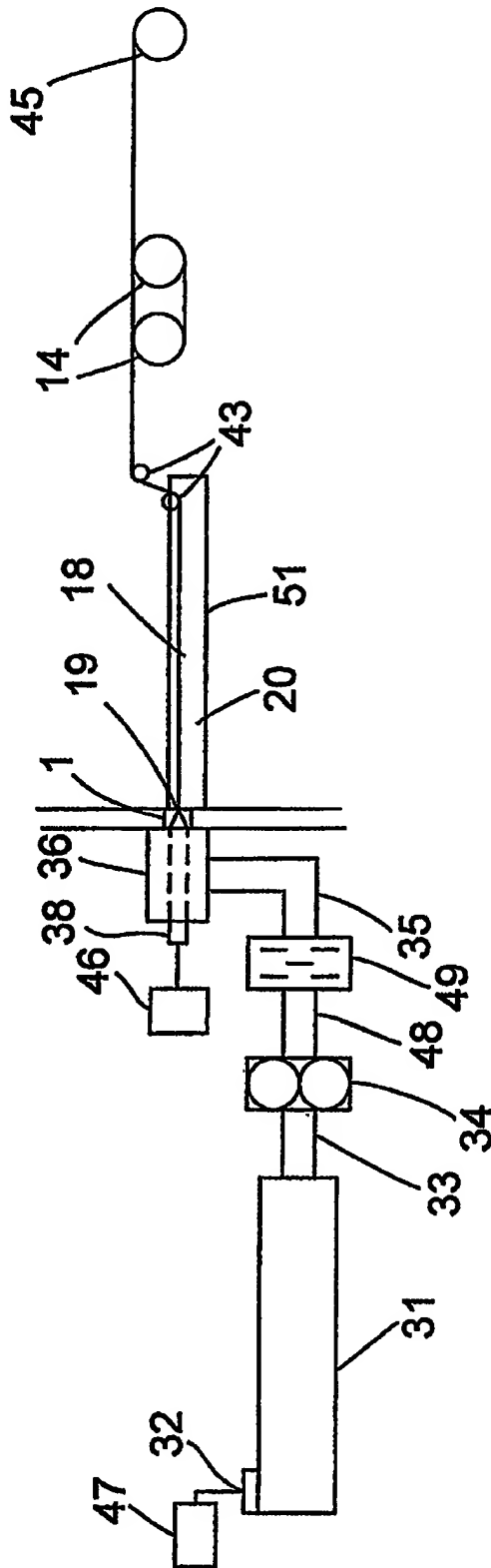


Fig. 4

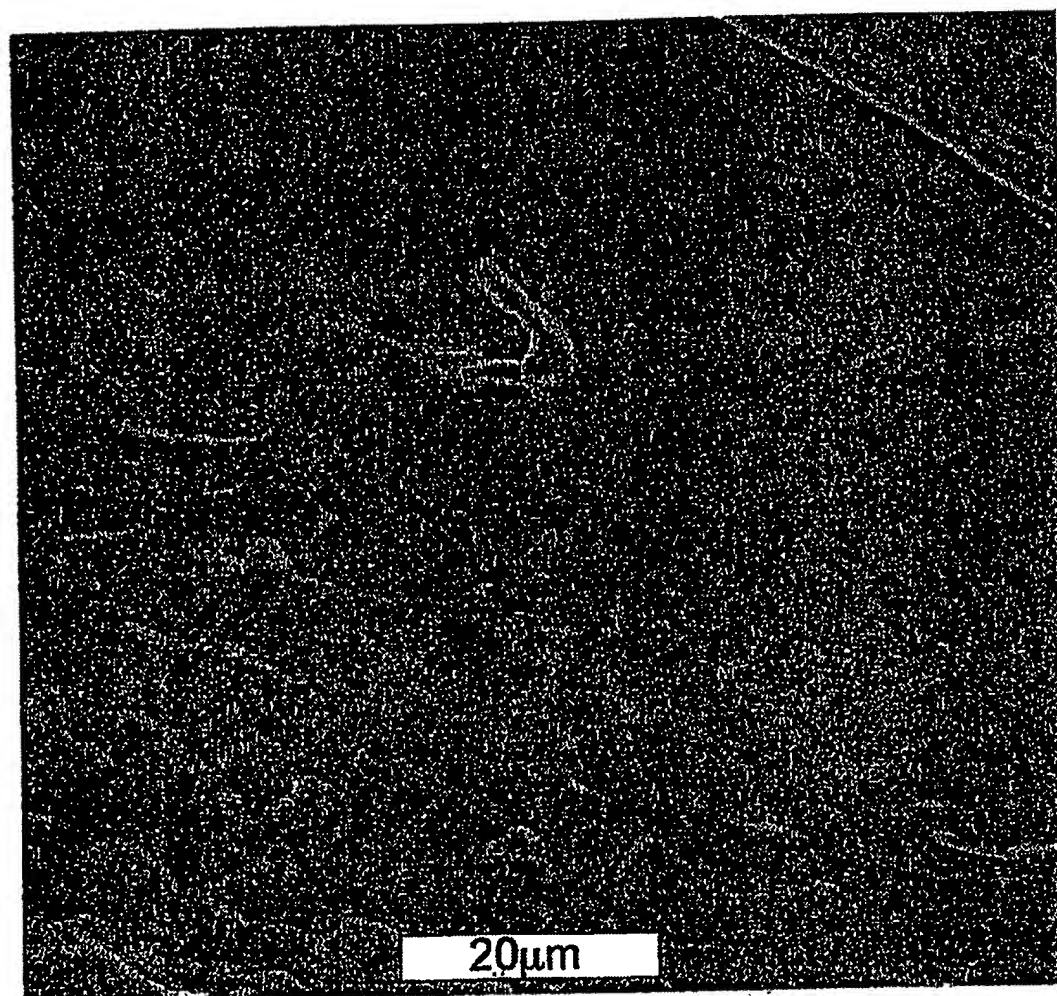


Fig.5

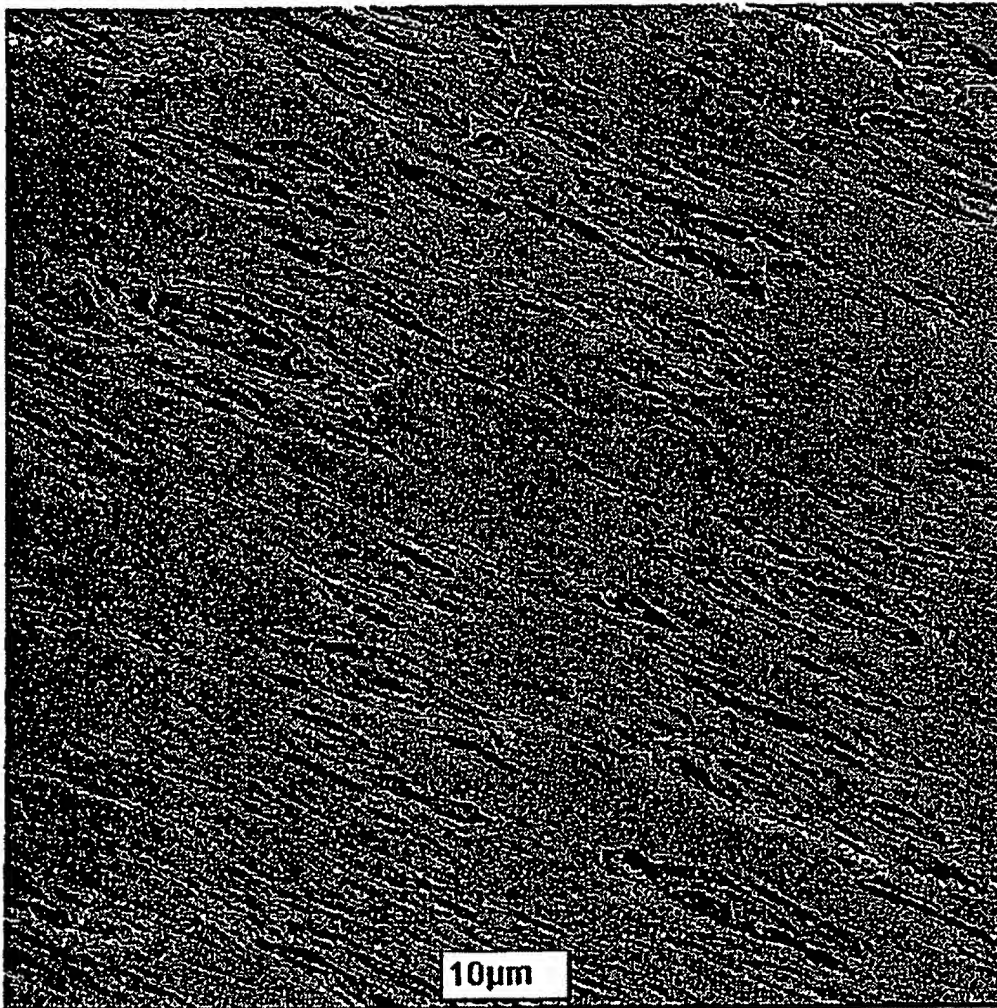


Fig.6

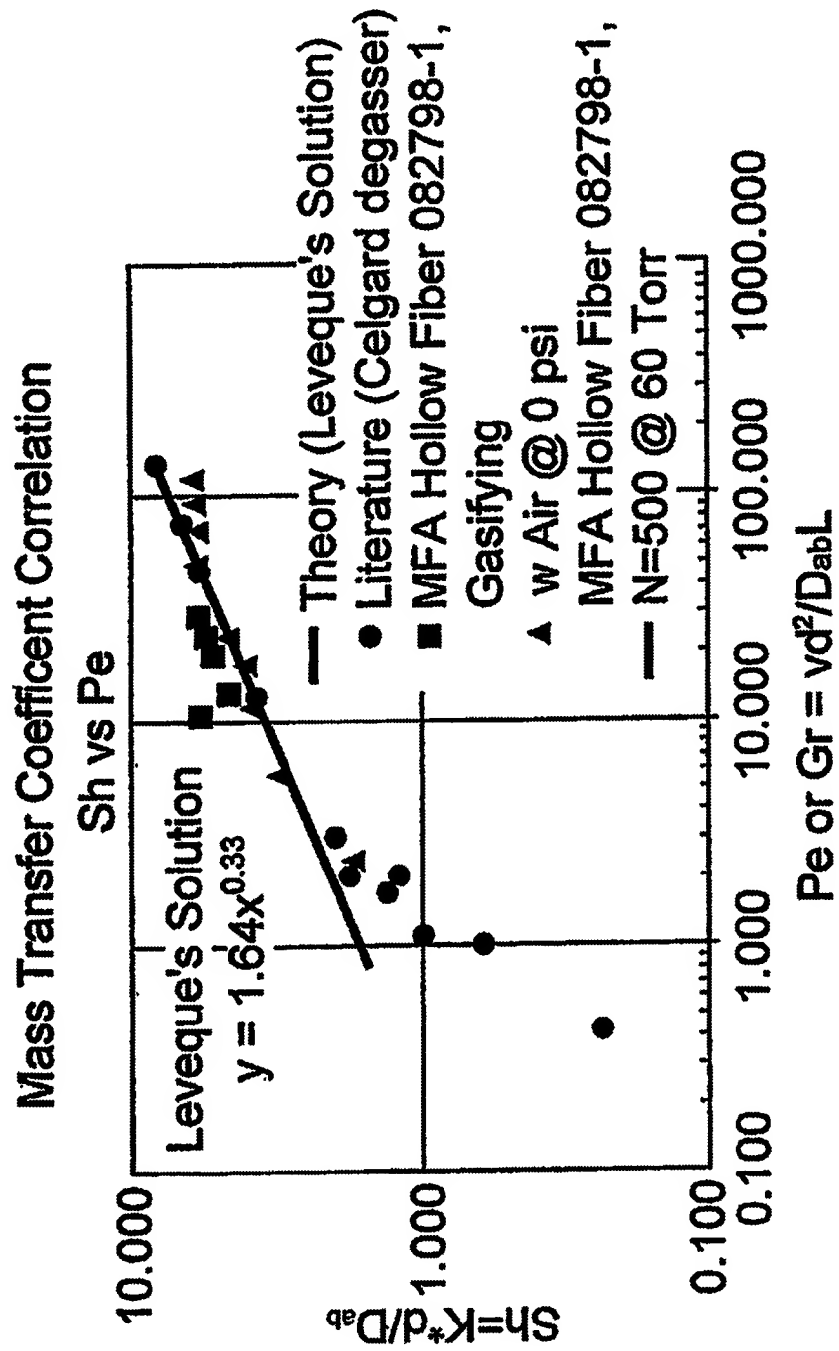


Fig.7

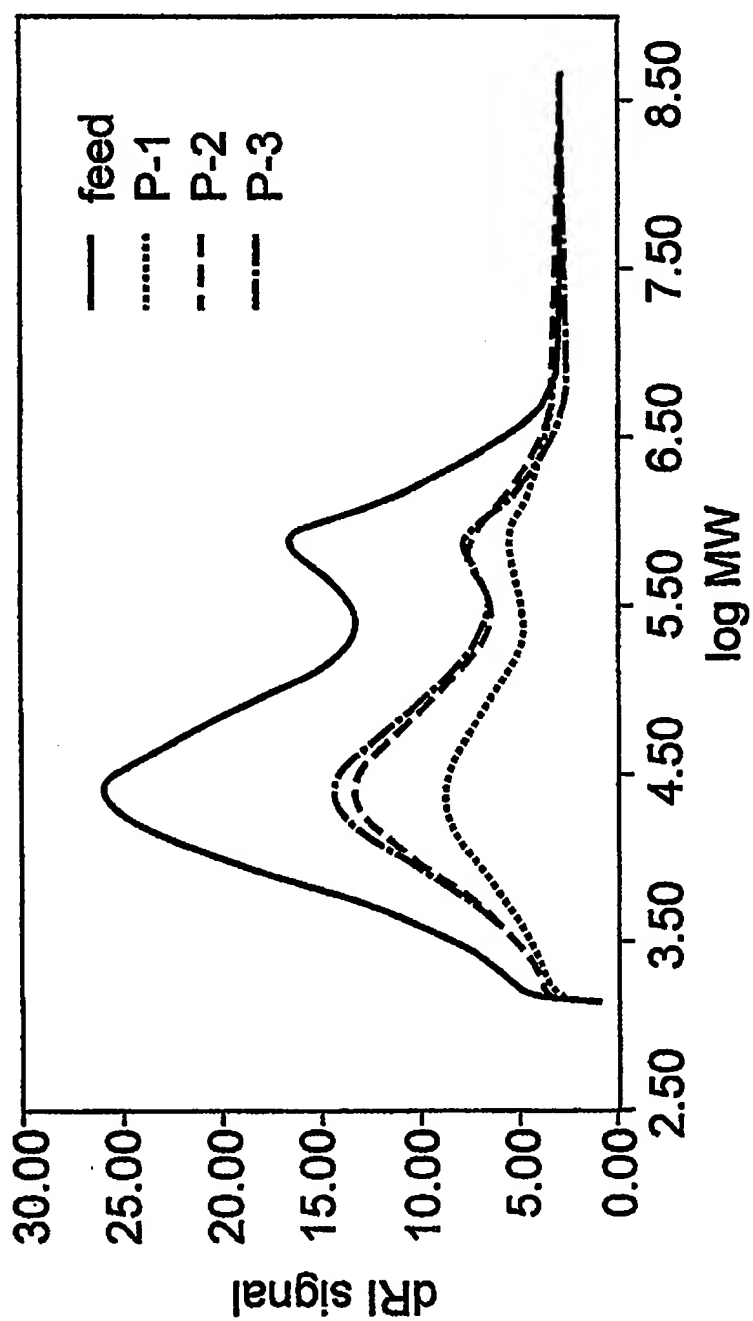


Fig.8

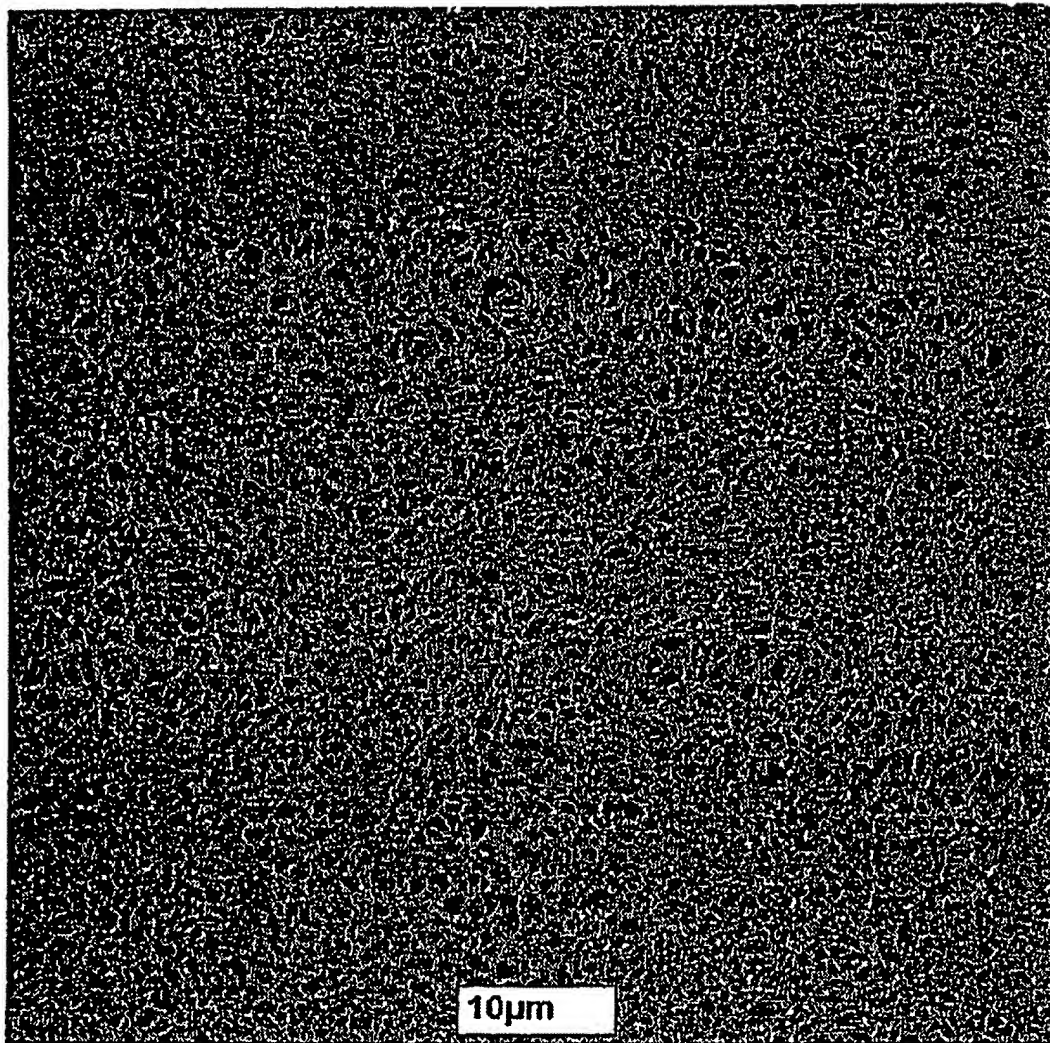


Fig.9

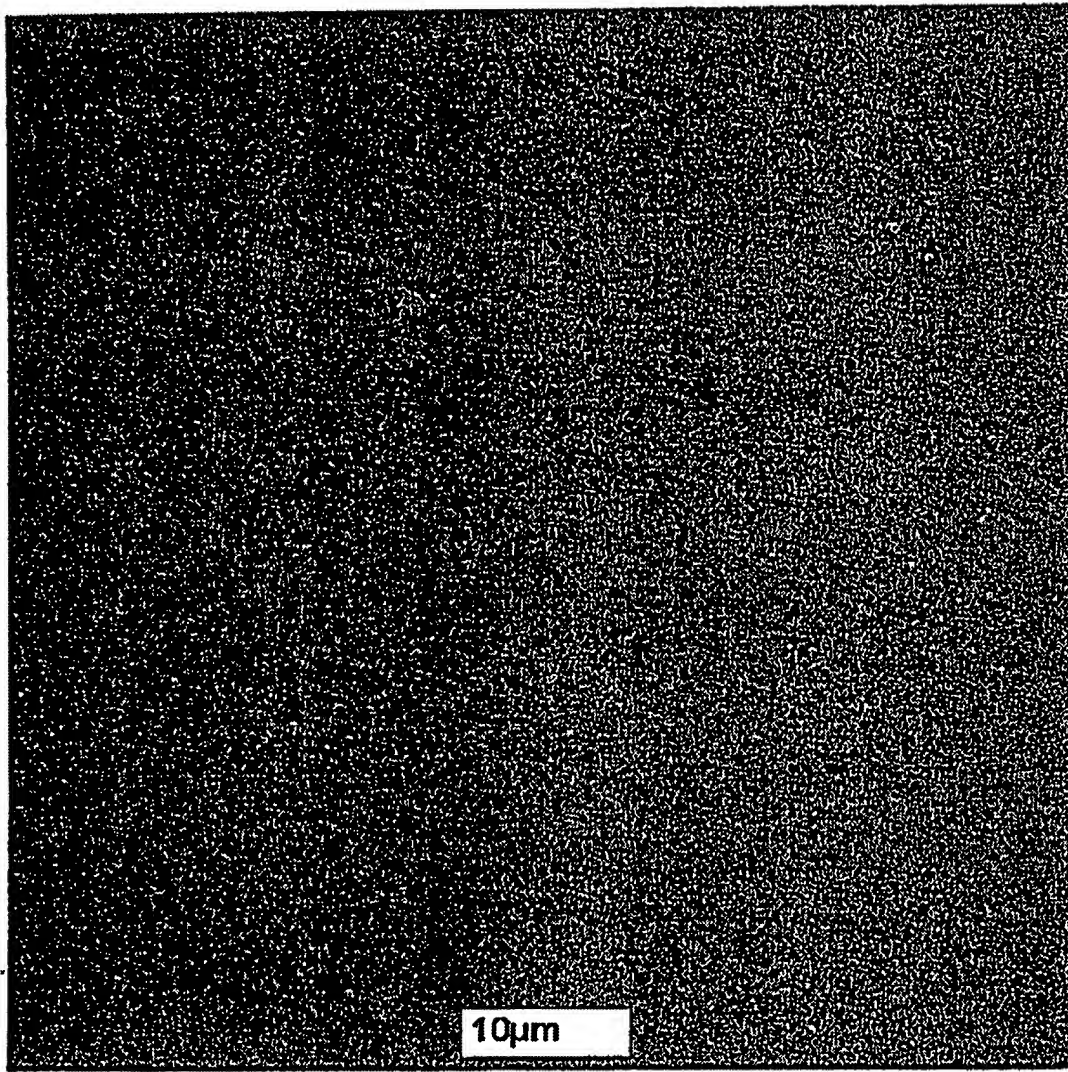


Fig.10

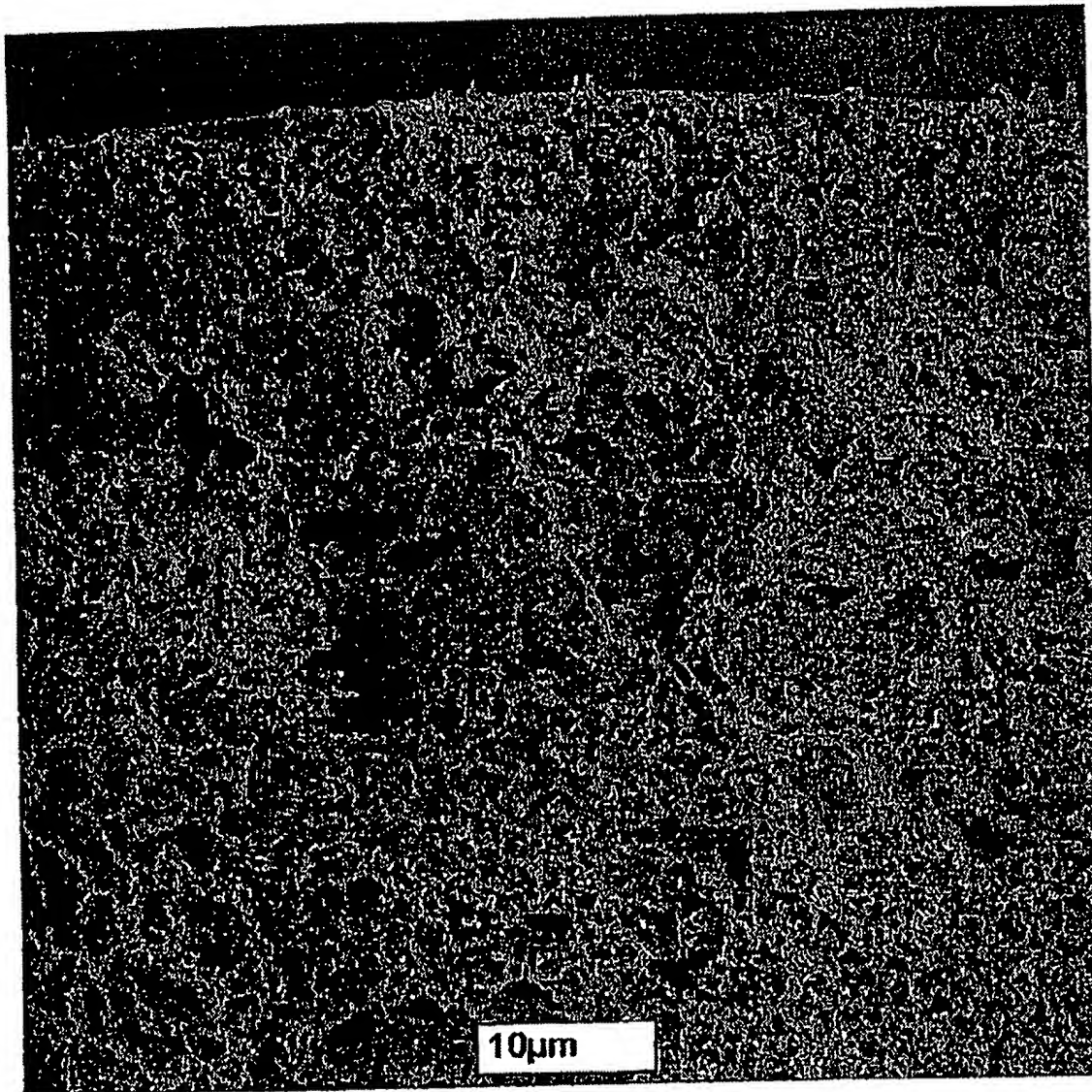


Fig.11